Electronic Supplementary Information

Ultrafast Spectroscopic Investigation on Fluorescent Carbon Nanodots: the Role of Passivation

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Table S1. Parameters obtained in the fitting procedure of TA kinetic traces in Figure 4.

Time scale (ps)	Amplitude @410 nm (10^{-4} OD)	Amplitude @460 nm (10^{-4} OD)	Amplitude @650 nm (10^{-4} OD)
0.3 ± 0.1	5.0	-5.0	3.0
2.6 ±0.1	4.0	6.0	2.0
50 ± 10	1.3	5.0	1.3
Nanoseconds	0.4	1.0	0

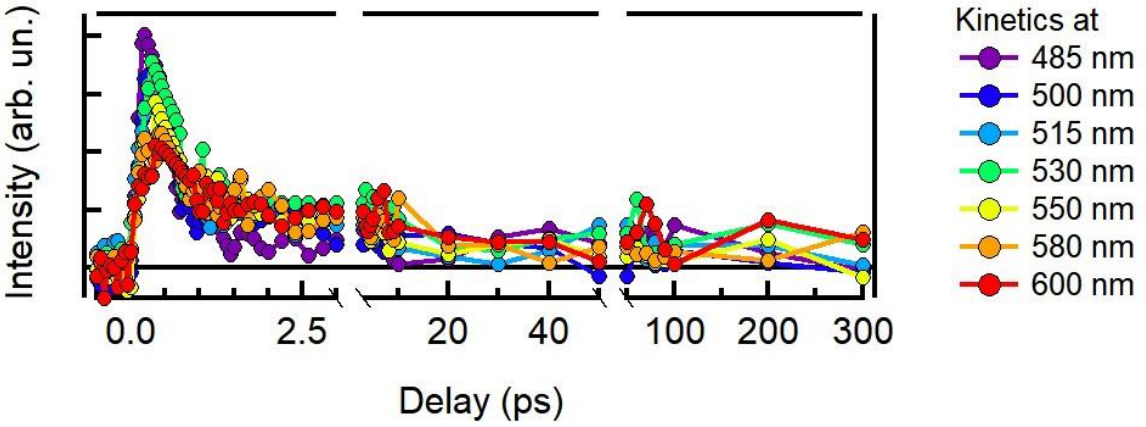

Figure S1. Kinetic traces recorded in a fluorescence upconversion experiment at different emission wavelengths of an aqueous solution of p-CQDs excited at 400 nm.

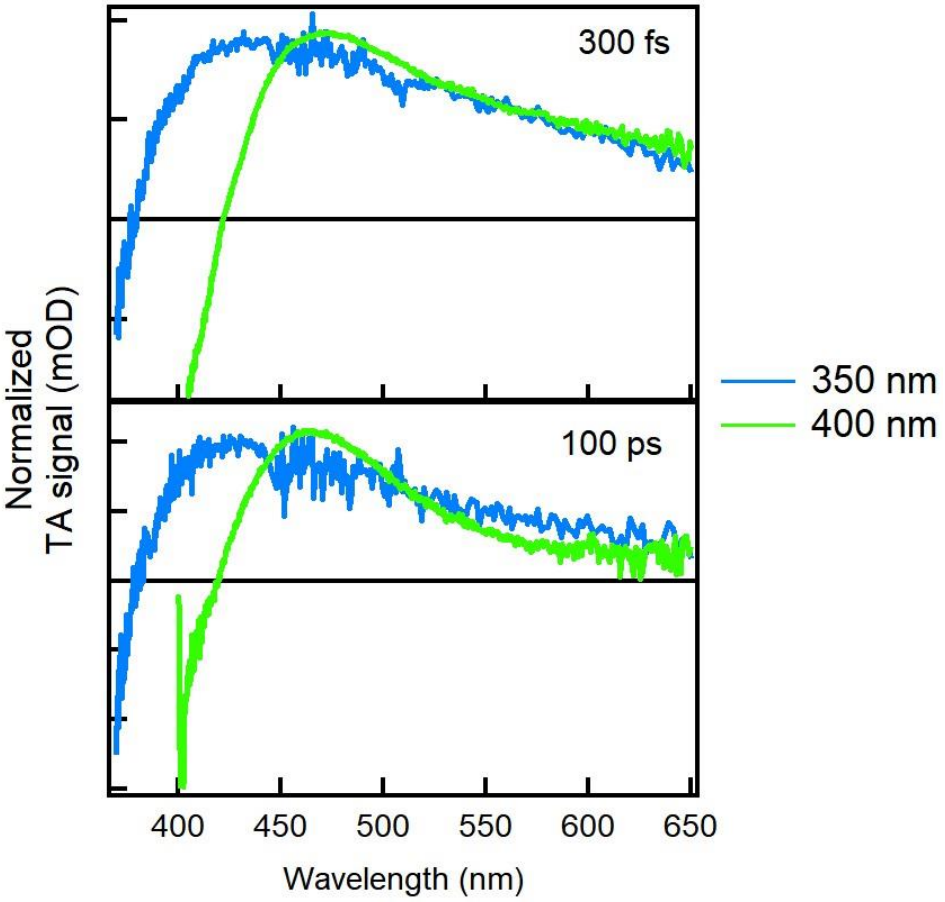

Figure S2. TA spectra of p-CQDs in water excited by pulses at 350 nm (blue curve) and at 400 nm (green curve), as recorded at two different delays after photoexcitation.

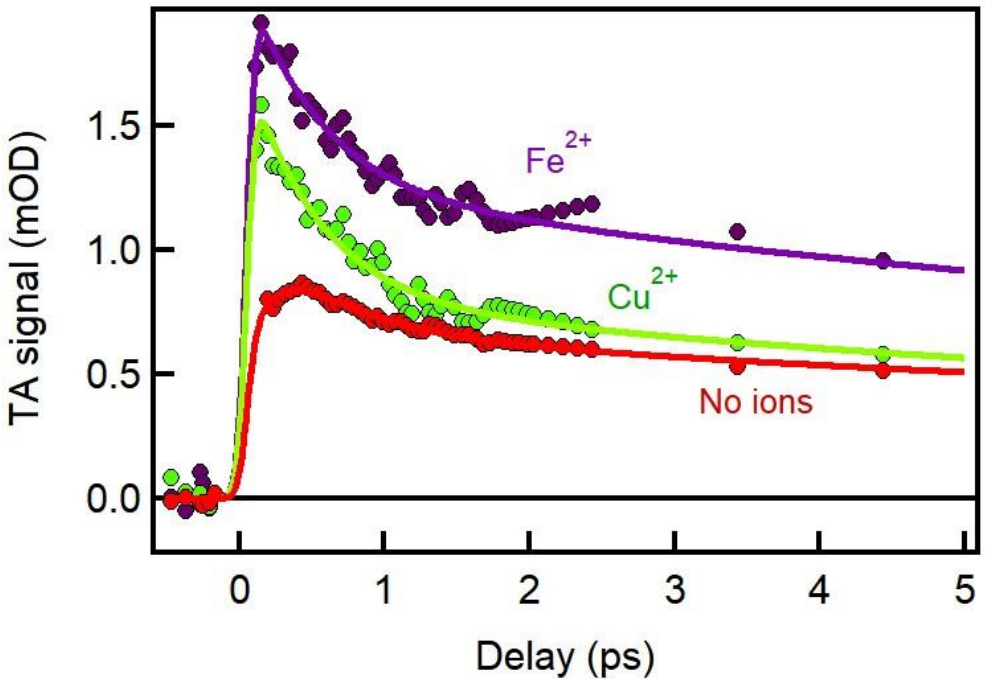

Figure S3. TA kinetic traces at 420 nm of p-CQDs (red curve), p-CQDs with 80 µM of Cu^{2+} (green curve) and with 80 µM of Fe^{2+} (purple curve) with the respective least-fitting curves. While the kinetic trace of bare CQDs is fitted by the time constants 0.35 ps and 2.2 ps, the kinetic traces of CQDs in the presence of Fe^{2+} and Cu^{2+} ions display an additional decay component with time constant of 0.4 ps, the effect of which is clearly visible in the data from 0 to 2 ps.

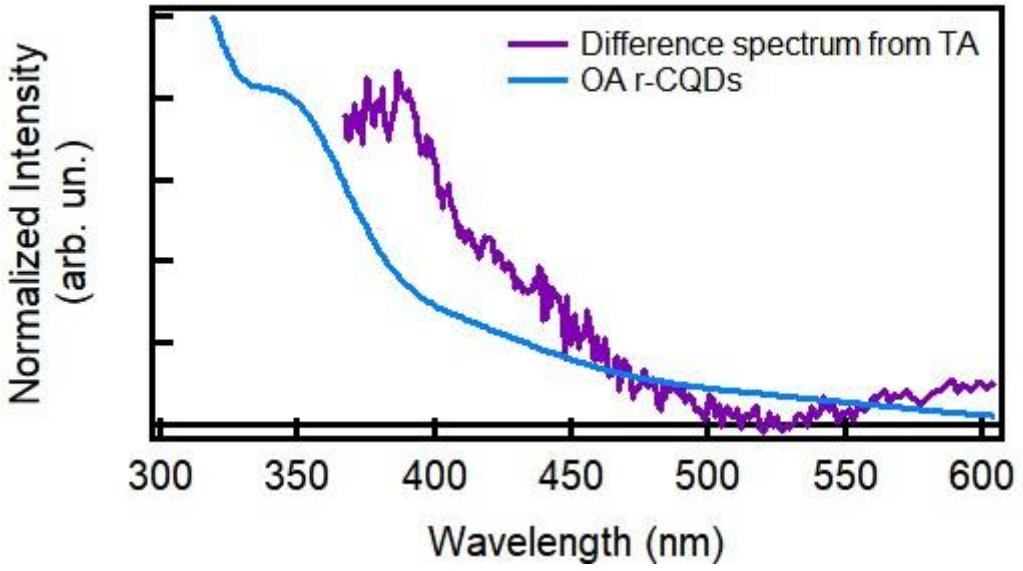

Figure S4. Comparison between the steady-state absorption spectrum of r-CQDs (blue curve) and the spectrum (purple curve) obtained from the difference between the TA spectra at delays of 1 ps and 200 fs, extracted from Figure 5c, and normalized to the amplitude at λ >600 nm before subtraction. As explained in the text, the difference spectrum highlights a stimulated emission signal peaked at 380 nm, which disappears from the TA spectra within the first ps after photo-excitation.